Distributed by:

JAMECO® ELECTRONICS

www.Jameco.com ✦ 1-800-831-4242

The content and copyrights of the attached material are the property of its owner.

Jameco Part Number 198096

RS-232 Digital I/O Module
Model 232SDD16

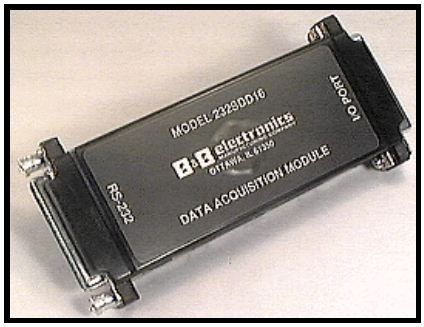
Document No. 232SDD162396

Description

The 232SDD16 provides a low-cost, easy-to-use solution for serial port to discrete digital I/O applications. The 232SDD16 offers 16 programmable digital I/O lines. This general purpose control module can be used to sense external ON/OFF conditions and to control a variety of devices. The 232SDD16 includes an instruction manual and diskette with a demonstration program written in QuickBASIC.

Features

- 16 programmable digital I/O lines
- CMOS/TTL compatible outputs (0Vdc to 5Vdc)
- CMOS/TTL compatible inputs (0Vdc to 5Vdc)
- Configurations stored in non-volatile memory
- Automatic baud rate detection
- RS-232 serial communications
- Port power capability



Commands

There are only two commands required to control the 232SDD16: set output lines, and read I/O lines. Three additional commands are used for configuring the module: define I/O lines, set output's power-up state, and read module configuration. Command strings are from four to six bytes in length; the "!" character, the "0" (zero) character, two command characters, and one or two data bytes (if required).

232SDD16 Commands

Function	Command	Response
Set Output Lines	!0SO {I/O msb}{I/O lsb}	no response
Read I/O Lines	!0RD	{I/O msb}{I/O lsb}
Define I/O Lines	!0SD{I/O msb}{I/O lsb}	no response
Set Powerup States	!0SS{I/O msb}{I/O lsb}	no response
Read Configuration	!0RC	*I/O Definitions* *Powerup States* {I/O msb}{I/O lsb}{I/O msb}{I/O lsb}

NOTE: Each {...} represents one byte.

In addition to the normal "!" (21h) commands, an extended set of commands using "#" (23h) as the first character have been added to provide bit-error identification by sending complements of character bytes after the fourth byte of the command and in all response character bytes.

© 1995 B&B Electronics -- Revised June 1996

232SDD16 Extended Commands

Function	Command	Response
Set Output Lines	#0SO {I/O msb}~{I/O msb}{I/O lsb}~{I/O lsb}	no response
Read I/O Lines	#0RD	{I/O msb}~{I/O msb}{I/O lsb}~{I/O lsb}
Define I/O Lines	#0SD{I/O msb}~{I/O msb}{I/O lsb}~{I/O lsb}	no response
Set Powerup States	#0SS{I/O msb}~{I/O msb}{I/O lsb}~{I/O lsb}	no response
Read Configuration	#0RC	*I/O Definitions* {I/O msb}~{I/O msb}{I/O lsb}~{I/O lsb} *Powerup States* {I/O msb}~{I/O msb}{I/O lsb}~{I/O lsb}

NOTE: Each ~{...} represents complement of one byte.

Digital I/O Lines

The 232SDD16 has 16 programmable I/O lines. As inputs they are CMOS/TTL compatible. As outputs they are CMOS/TTL compatible. The digital I/O lines are available on a DB-25S (female) connector. Inputs can be used to sense switch closures, contact closures or the state of digital signals. Inputs can also sense AC voltages by connecting solid state relays between the AC voltage source and the input. Digital outputs are used to turn on and off external devices. Buffering of the output may be required in order to supply the proper power to control the external device. Controlling AC voltage devices requires connecting solid state relays between the device and the digital output. Solid state relays are available from many manufacturers.

I/O Connector Pinout

DB-25S Pin #	Function	DB-25S Pin #	Function
7	GND	16	I/O #13
8	+12Vdc Input	17	I/O #12
9	I/O #0	18	I/O #11
10	I/O #1	19	I/O #10
11	I/O #2	21	I/O #9
12	I/O #3	22	I/O #8
13	I/O #4	23	I/O #7
14	I/O #15	24	I/O #6
15	I/O #14	25	I/O #5

Communications

The 232SDD16 connects to your computer's RS-232 serial port through a DB-25S connector. The unit automatically detects baud rates from 1200 to 9600. A data format of 8 data bits, 1 stop bit and no parity is used. The 232SDD16 is configured as a DCE device.

RS-232 Connector Pinout

DB-25S Pin #	Signal Name	Signal Direction at 232SDD16	Notes
2	Transmit Data (TD)	Input	Connection is required.
3	Receive Data (RD)	Output	Connection is required.
4	Request to Send (RTS)	Input	Must be kept high to power unit.
7	Signal Ground (SG)	-	Connection is required.
20	Data Terminal Ready (DTR)	Input	Must be kept high to power unit.

© 1995 B&B Electronics -- Revised June 1996

Specifications

I/O Lines

Total:	16
Inputs	
Voltage Range:	0 Vdc to 5 Vdc
Low Voltage:	1.0 Vdc max.
High Voltage:	2.0 Vdc min.
Leakage Current:	1 microamp max.
Outputs	
Low Voltage:	0.6 Vdc @ 8.3 milliamps (Sink)
High Voltage:	4.3 Vdc @ -3.1 milliamps (Source)

Power Supply

Input Voltage:	8 Vdc to 16 Vdc
External power:	35 milliamps* @ 12Vdc
Port power:	15 milliamps* (RS-232 RTS & DTR lines must be high to power unit.) * Doesn't include the power consumption of external devices.
Connection:	DB25S connectors and 2.5mm Phone Jack

NOTE: When using an external supply, the supply should be connected only to specifically labeled power inputs (power jack, terminal block, etc.). Connecting an external power supply to the handshake lines may damage the unit. Contact technical support for more information on connecting an external power supply to the handshake lines.

Communications

Standard:	RS-232 (unit is DCE)
Baud Rate:	1200 to 9600 (automatic detection)
Format:	8 data bits, 1 stop bit, no parity
Connection: `	DB-25S (female)

Size 0.7" x 2.1" x 4.7"

© 1995 B&B Electronics -- Revised June 1996